

WHAT IS CLAIMED IS:

1. A nonreciprocal circuit element comprising:
a parallelepiped enclosure;
5 a permanent magnet disposed in the enclosure; and
a magnetic assembly disposed in the enclosure, the
magnetic assembly including:
a magnetic plate;
a common electrode on the magnetic plate; and
10 a plurality of central conductors on the magnetic
plate,
wherein the length of a long side of the enclosure is
3.5 mm or less and a pair of independent terminals connected
to at least one of the central conductors are disposed
15 substantially in the contour of the enclosure.
2. The nonreciprocal circuit element according to claim
1, wherein the enclosure includes a top yoke and a bottom
yoke, the top yoke includes two parallel side plates defining
20 side wall surfaces of the enclosure, the bottom yoke includes
cutouts of which the width is larger than the depth, the
width direction of the cutouts being substantially identical
to the direction of the side wall surfaces, the independent
terminals are disposed in the cutouts, and the bottom yoke is
25 integrated with the independent terminals with resin.
3. The nonreciprocal circuit element according to claim
2, wherein each of the independent terminals includes a

terminal body and a bent terminal segment formed by bending one end of the terminal body and the longitudinal direction of the terminal body is aligned with the width direction of the corresponding cutout.

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4. The nonreciprocal circuit element according to claim 3, wherein each of the bent terminal segments is exposed to the outside of the corresponding side wall surface of the enclosure.

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5. The nonreciprocal circuit element according to claim 3, wherein the entire surface of each of the bent terminal segments has an anti-corrosion plating layer.

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6. The nonreciprocal circuit element according to claim 3, wherein the other end of each of the terminal bodies is exposed to the outside of the corresponding side wall surface and the entire surface of each of the terminal bodies, except for the exposed portion, has an anti-corrosion plating layer.

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7. The nonreciprocal circuit element according to claim 6, wherein at least one part of the exposed portion has an anti-corrosion coating layer.

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8. A communication apparatus including the nonreciprocal circuit element according to claim 1.

9. A lead frame for a nonreciprocal circuit element,

comprising:

a hoop including:

a pair of side divisions, each of which includes a fold section formed by die-cutting a portion of the side division into a substantial bold U shape, the fold section including a support segment extending from an inner edge toward an outer edge of the portion of the side division and an independent terminal segment formed at an end of the support segment, the independent terminal segment being wider than the support segment; and

a bottom yoke section between the side divisions, the bottom yoke section including a pair of cutouts of which the width is larger than the depth,

wherein each of the independent terminal segments is positionally symmetrical with the corresponding cutout with respect to a fold line of the corresponding fold section.

10. A lead frame for a nonreciprocal circuit element, comprising:

a hoop including:

a pair of side divisions; and

a bottom yoke section between the side divisions, the bottom yoke section including a pair of cutouts of which the width is larger than the depth,

wherein each of the side divisions includes a fold section formed by die-cutting a portion of the side division into a substantial bold U shape and bent towards the bottom yoke section, the fold section including a support segment

extending from an inner edge of the portion and an independent terminal segment formed at an end of the support segment, the independent terminal segment being wider than the support segment, and the independent terminal segments
5 are disposed in the respective cutouts.

11. The lead frame for a nonreciprocal circuit element according to claim 9, wherein each of the independent terminal segments includes a terminal body and a bent
10 terminal segment formed by bending one end of the terminal body, the support segment being joined with the other end of the terminal body.

12. The lead frame for a nonreciprocal circuit element
15 according to claim 11, wherein each of the bent terminal segments is perpendicular to the bottom yoke section.

13. The lead frame for a nonreciprocal circuit element according to claim 9, each of the fold sections further
20 including a notch between the support segment and the independent terminal segment.

14. The lead frame for a nonreciprocal circuit element according to claim 9, wherein the entire surface of the lead
25 frame has an anti-corrosion plating layer.

15. A method for manufacturing a nonreciprocal circuit element, the method comprising the steps of:

die-cutting a hoop to form a bottom yoke section having a pair of cutouts of which the width is larger than the depth and a pair of fold sections each including a support segment and an independent terminal segment wider than the support
5 segment, the bottom yoke section being joined with the fold sections by the hoop;

folding each of the fold sections towards the bottom yoke section such that each of the independent terminal segments is disposed in the corresponding cutout by aligning
10 the longitudinal direction of the independent terminal segment with the width direction of the cutout;

integrally insert-molding the bottom yoke section and the independent terminal segments with resin; and

cutting off the bottom yoke section and the independent
15 terminal segments from the hoop to produce a bottom yoke.